CACTUS AND SUCCULENT JOURNAL

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XIX DECEMBER, 1947 No. 12

FIG. 120. *Ferocactus Diguetii* on Catalina Island, in the Gulf of California, towers above George Lindsay. This plant is the giant of all Barrel Cacti.

CACTUS AND SUCCULENT JOURNAL

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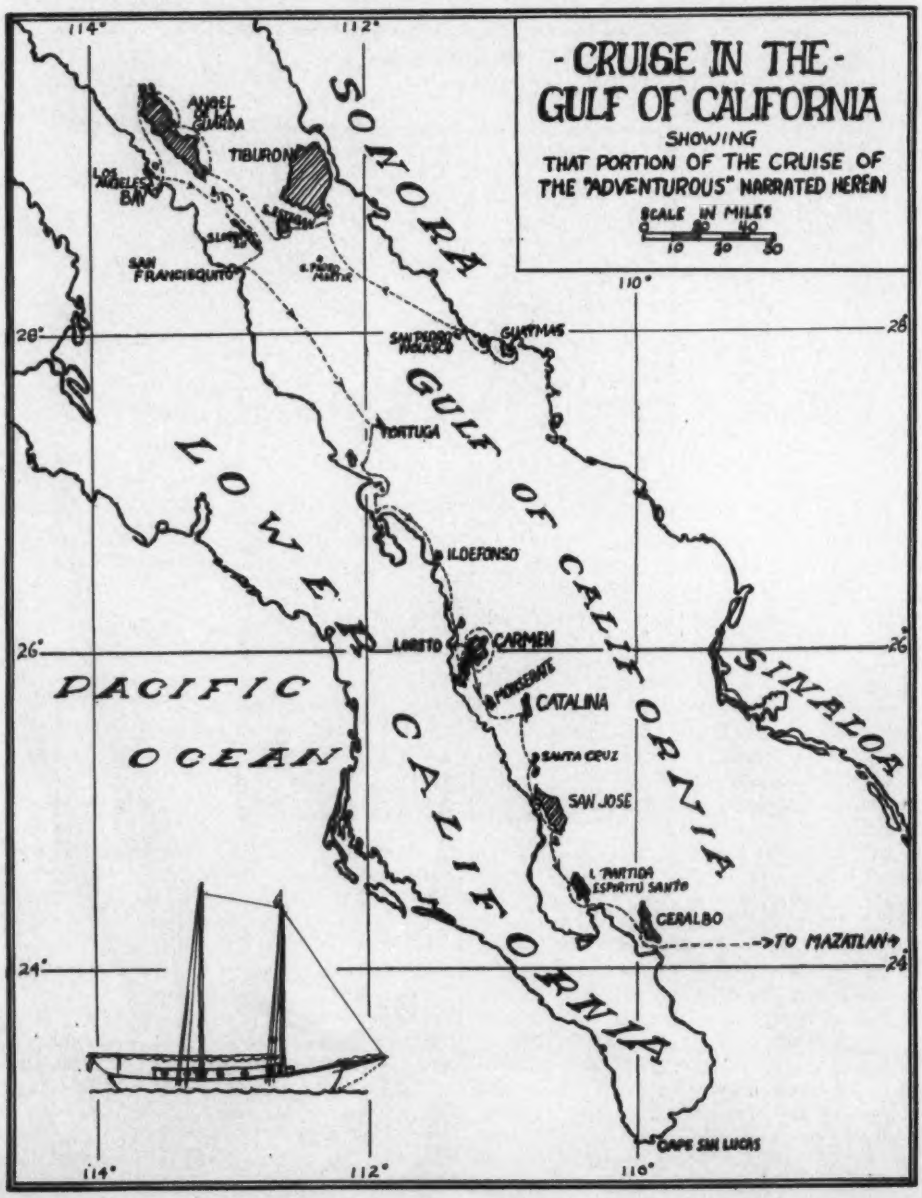


FIG. 121.

FIG. 122.
The "Adventurous" anchored at San Pedro Nolasco Island

A Cruise in the Gulf of California

By GEORGE LINDSAY

Photos by Author

The Gulf of California, often called the Sea of Cortez or Vermilion Sea, is the long and narrow body of water which for six hundred and fifty miles separates the peninsula of Baja California from the Mexican mainland states of Sonora and Sinaloa. It has often been visited and written about; it is still little known. The upper half is practically uninhabited and few boats disturb its waters.

For some years I have been interested in the cacti of Lower California. On many trips we have penetrated first one and then another section of the peninsula. The study of the cactus flora raised questions which could only be answered by visits to the Gulf islands. Occasionally dugout canoes took us to the more accessible of these, but there were always distant ones we could not explore.

In February of this spring Mr. Herbert Bool and I drove to Guaymas, where I made inquiries concerning the charter of a boat from that port to make a survey of those islands in the northern part of the gulf, the trip to be made in 1948. While we were in Guaymas we chartered a small pleasure boat and visited San Pedro Nolasco Island, making collections there.

After my return home my brother said that he had received word from friends, Mr. and Mrs. Wilson Long, who had arrived at Guaymas in their yacht "Adventurous" the day we left. We were invited to join them for a short cruise and fishing trip. My brother, a friend and I drove back down to Guaymas, where we met the Longs. We all went out on a few days cruise, anchoring at night in San Carlos and San Pedro Bays. We again stopped on San Pedro Nolasco Island.

Learning of my interest in visiting the gulf isalnds, the Longs most generously invited me to remain with them in order to make a complete "tour" of the gulf. They were taking a year to sail where the mood pleased them, and assured me they were willing to spend a month poking about those islands I was anxious to visit. The advantages of such an opportunity are obvious. My brother, who was flying back,

offered to keep an eye on my ranch and other responsibilities. Thus we decided that I could accept the Long's invitation to cruise north about the islands of the upper gulf, then down the Lower California side, visiting the islands and points on the peninsula. After reaching the end of Lower California we would cross the mouth of the gulf to Mazatlan, where I would leave the Longs and return to Guaymas to pick up my car.

I was, and still am, overwhelmed by the Long's generosity in that invitation. No better companions could be imagined. These people I had met only the week before acted as if the "Adventurous" were mine! No island was too isolated to visit, no trouble too great to make possible such visits. It was as if the purpose of their entire cruise was to find what cactus grew where!

After my brother's departure from Guaymas a week was spent in outfitting. Gasoline and water tanks were filled, even to extra tanks lashed on deck, laundry picked up and food arranged for. We expected to see no store for a month, and in the gulf ample extra provisions must be carried for emergencies. I was signed on the crew register as "chief engineer"—our agent, Mr. Hunaus, had a keen sense of humor! A skiff was bought to replace a dinghy lost earlier. The last morning we were in port Lynne and I scurried from market to bakery to ship chandlers, picking up supplies, till the taxi groaned and its rear tires were flattened by weight. Meanwhile Bill was busy on board, entertaining many well-wishers who came out to see us off. We had omitted calculating this last minute heavy drain on the spirits locker, and as a result the last half of the cruise was in one way dry. At noon on April second we weighed anchor, gave two blasts on our little fog whistle, and were away.

We passed San Carlos Bay, heading north close in to the Sonora shore to better see the groves of fan palms which choked arroyo mouths. Anchoring again at San Pedro Bay we spent a few hours in order to make our first landfall on Tiburon island during the daylight hours. Bill and I rose at midnight, started the engine and hoisted anchor, and were soon headed out through a moonlit sea towards Tiburon.

As we had collected on San Pedro Nolasco Island the week before we didn't stop again. I do want to mention the island, though, as it is one of the most interesting in the gulf. While close to Guaymas and easily accessible by chartered sport boats, it has seldom been visited by plant hunters. The whole island, which is only two and a quarter miles long, is covered with heavy desert growth. It is a fine natural rock garden, with cacti, large and small, growing in unbelieveable profusion. The dominating species was *Pachycereus Pringlei,* while the sweet pitahaya, *Lemaireocereus Thurberi,* covered the steep slopes. Under these large plants were huge clumps of attractive white spined *Mammillaria multidigitata* and golden *Echinocereus Websterianus.* In broken rocks at the very crest I located *Mammillaria Evermanniana,* a globular attractive white species, once mentioned tentatively as *M. nolascana.** A nearly naked platy-

*Cact. and Succ. Journ. XII, pg. 5.

FIG. 123.

LEFT: San Pedro Nolasco Island. RIGHT: When we approached islands, Bill judged the depths by water tones which are best seen from the rigging.

FIG. 124.
Lynne stands beside *Pachycereus Pringlei* on San Esteban Island.

opuntia and a cylindropuntia near *O. fulgida* completed the cactus flora. Large California brown pelicans sat on nests built of sticks, protecting their eggs and ugly, gray young from the raiding ravens. Large rock iguanas, some nearly four feet long, climbed about the rocks and cliffs, or slept in the sun. The wild fig of Lower California, *Ficus Palmeri,* was found as good sized trees along canyon walls, where it sent its white roots down over the rocks searching for moisture.

Returning to the voyage, we sailed a 180 degree course through the moonlight and a calm sea. The rugged peaks of Sonora and San Pedro Nolasco stood above us. It was such a night that we all sat in the cockpit, reluctant to go below for sleep on our off watches. About seven thirty in the morning we picked up San Pedro Martir Island dead ahead, and Bill changed our course to 215 degrees. Tiburon was soon in sight, and about two P. M. we dropped anchor in a cove called Ensenada Perro, at the southeast corner of the island. Tiburon, or Shark Island, has been the subject of wierd tales since the days of the Jesuits. Its inhabitants, the Seri Indians, did not welcome visitors, and are said to have used for food those persons who persisted in trespassing! We do know that the Capt. George Porter, who had taken several of the first natural history expeditions into Lower California, and for whom *Pereskiopsis Porteri* was named, was killed by the Seris on Tiburon in the fall of 1897. Even a rumor of cannibalism always results in much curiosity. In any case, the tribe has now dwindled to about eighty individuals, who are neither unfriendly or overly hospitable. We went ashore to find a shark fisherman's

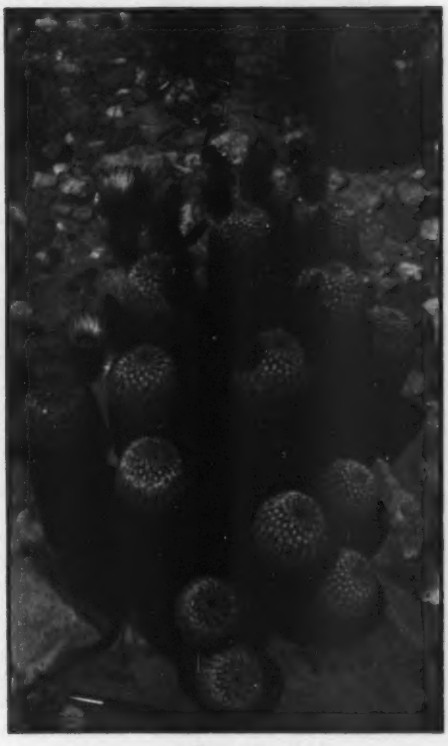


FIG. 125.
Echinocereus grandis—San Esteban Island.

FIG. 126. *Mammillaria armillata* on San Esteban Island.

camp. We had noticed clusters of bobbing glass floats marking ends of setlines. Only the livers of the sharks are utilized, but being of very high Vitamin-A content, these are valuable. Guaymas boats picked up the drums of livers, and from there they were shipped to pharmaceutical houses in the States for oil extraction. The fishermen sat in the shade of small brush huts built on the beach. Some came by later in a dugout canoe to give us lobsters they had speared.

We walked inland to see what grew on the island. There were two giant cacti—the Arizona giant, *Carnegiea gigantea,* and the Lower California Giant, *Pachycereus Pringlei. Lemaireocereus Thurberi* was there to furnish sweet pitahayas for the Seris, as was the sour pitahaya, *Machaerocereus gummosus.* The latter was rather of a surprise. While clambering *M. gummosus* is very widely distributed throughout Lower California and its adjacent islands, we hardly expected to find it here on Tiburon, only a few miles from the Sonora shore. The species is unknown in Sonora, yet here it was within easy "jumping distance." *Lophocereus Schottii* raised bristly branches, and the barrel cacti were represented by *Ferocactus Wislizenii.*

The next morning we got an early start for San Esteban, which we could see only a few hours run to the west. A gusty wind during the night had chopped the gulf, so the "Adventurous" occasionally dipped her bow, and raising it, tossed spray and water back over the decks. We were towing the skiff which we had purchased in Guaymas. Little "slapper" waves would toss a few gallons of water into it from time to time, till it was nearly filled. By heaving to, Bill was able to jump into it and bail it out.

To be continued

FIG. 127. *Jatropha podagrica* Hook. in flower and fruit.

Jatropha podagrica Hook.

By J. R. BROWN

It is just about 100 years since this Jatropha was named and described by Hooker in Curtis's Botanical Magazine t. 4376 (1848), where it is called the Gouty-stalked Jatropha, and for this reason the epithet *podagrica* was given.

This plant is greatly prized by those interested in succulents, probably due to the rarity of good specimens, as, being a plant of the tropics it is not very happy under the conditions which the average grower has to offer. It is a plant which flourishes in a hothouse, and does not thrive too well in the hot dry summers of So. California when planted outdoors, and the wet and cold of our winters soon cause it to decay.

An old plant may have a branched succulent stem about 60 cm. high, and greatly swollen towards the base, light brownish-green in color and marked with the old leaf scars, and the persistent and somewhat fimbriate stipules. The few, long petioled, peltate leaves are borne at the apex of the branches, smooth, bright green in color, and with 3-5 lobes. The long, terminal

peduncles bear a cyme of brilliant, orange-scarlet flowers, which are monoecious.

The plant described by Hooker came from Santa Martha, New Grenada (now Santa Marta, Colombia), but it would seem to be widely dispersed throughout Central America.

The plant shown in the photo is a young specimen, which was about 28 cm. (11 inches) in diameter across the leaves, and was raised from seed and has spent its life in a hothouse. I have seen old plants which were brought over from Hawaii, where it grows luxuriantly, quite grotesque in appearance when compared with this symmetrical young plant.

The inflorescence has been likened to a piece of brilliant coral. The color of the flowers is intense and glowing and immediately arrests the eye; and where one can give this member of the *Euphorbiaceae* the proper temperature it is well worth growing, flowering more or less continuously when conditions are suitable.

PRELIMINARY CONVENTION PLANS FOR PHOENIX IN 1949

Plans for the Phoenix Convention have been roughly outlined by your Convention Chairman and his assistants but before these are finally settled we would like some expressions of opinion from the membership at large. The second week of July, 1949, was chosen at the Cincinnati Convention. A check up of the 1949 calendar shows that the first July week end will be a long one as the Fourth will come on Monday. A large percentage of any convention's attendance comes from the area within a day's journey, approximately five hundred miles from the convention site. All of Arizona, New Mexico, Southern California and a large part of Texas are within such an area. Society members are numerous in these states, so the first week end of July seems the logical time for drawing the largest attendance. A suggested program follows:

July 2. Morning; Registration. Afternoon and evening; Meetings.

July 3. Morning; Church. Afternoon and evening; Meetings.

July 4. Field trip to Superstition Mountains. Evening; Fun Session.

July 5. Morning; Meetings. Afternoon; Business Session. Evening; Banquet.

Among the special features are: A guided field trip of several days following the convention. One of the finest auto courts in the country for lodging accommodations. A camping place right on the convention grounds for those who like to camp out. Initiation into the Ancient Order of Cactus Nuts. All meetings to be conducted in the midst of the world's finest cactus and succulent garden which is located in one of the nation's finest natural cactus gardens.

Among the questions your chairman would like to hear from you about, are: Is the above choice of dates or mid-week dates preferrable? Shall the one-day field trip come during the convention or on the day following the convention. Please send letters discussing these questions as well as letters concerning the features you would like to see incorporated into the convention program. These letters should arrive before the end of January as your chairman wishes to have the convention well outlined when he meets with the Arizona Society in February.

Your chairman spent several days this fall in the Desert Botanical Garden at Phoenix. He was amazed at the steady expansion program Director Marshall is carrying out and learned that before convention time, one of the finest private collections of magnificent specimen plants will be moved and added to the abundance of fine plants already in the garden. The auditorium of the garden's Administration Building is admirably adapted to convention sessions. The windows can be instantly blacked out for illustrated talks at any hour. Probably a number of convention meals will be served right in the building. So lay your plans now for Phoenix in Forty Nine.

HOWARD E. GATES, *Convention Chairman*
P. O. Box 247, Corona, Calif.

A METHOD FOR PRESSING CACTUS FLOWERS

1. Remove the flower from the stem, with the ovary intact.

2. With the thumb and forefinger, hold the flower by the ovary, allowing it to hang down.

3. With the disengaged hand, take a double edged razor blade and make a downward cut through the center of the ovary and tube. The corolla may then be gently pulled apart.

4. Lay the two sections, cut surfaces down, on a piece of tissue paper.

5. Place this in a book that has porous leaves. An old telephone book is suitable.

6. Keep the book in a warm, dry, airy spot, and place a flat weight evenly over the surface.

The weight should be just sufficient to flatten the flower. It may be removed during the day to permit faster drying. It will also be found helpful to move the flower daily, to a new section of the book.

This method is suitable for limited numbers of specimens and for certain groups in the Cactaceae. Small flowers of light texture need not be cut in half. Those that are very thick and fleshy may be better preserved in alcohol.

T. MACDOUGALL.

EDITOR'S NOTE: Mr. MacDougall states the above method may be amateurish but he prefers it to the newspaper, blotter, and corrugated combination, for evenly pressed specimens that retain their colors. Examples of his work sustain his theory.

GREETINGS FROM THE EDITOR

Your editor is grateful for the many notes of appreciation being received at this season. He would like to send each reader a personal message but the next 12 issues of the JOURNAL will be my expression of gratitude for 1948.

FIG. 128.

E. guatemalense, at the height of the season, September, 1941. The same plant, in fruit, November, 1941. Note the persistent perianth, characteristic of the genus. The shining magenta "pitahayas" are showy and long lasting. The whitish pulp is sweet and edible. No fruit set with plant's own pollen, but pollen of any other Epiphyllum species was always effective. Wilted condition of the plant was first attributed to drain by the fruit; later, roots were found partially destroyed by nematodes.

Epiphyllum Guatemalense

By T. MACDOUGALL

Wanderings in Southern Mexico during the 1938-39 season had taken me back to Tapachula, coffee metropolis in the southernmost tip of the republic. On a previous visit the town had been a jumping off point for the ascent of Volcán Tacaná, on the border of Guatemala. Alpine species, notably *Werneria nubigena,* collected in the crater and on the summit, proved a dismal failure, cultivated in sea-level New York. Now I proposed to collect at the foot and on the lower slopes of the volcano. Among other things, a trial shipment by air, of orchid flowers, *Cattleya Skinneri,* would be made; and I hoped to find the "Epiphyllum," *Chiapasia Nelsoni.* I have yet to see *Chiapasia* in the wild, but the search for it started a collection of Epiphyllum species that E. J. Alexander is still unraveling. The center chosen for the orchid operations was the little town of Cacahoatán, at the foot of Tacaná—the buildings along its main street framing the 14,000 ft. cone.

On the bus ride from Tapachula to Cacahoatán, flowering plants of *Cattleya Skinneri* were seen at native houses along the road; and later, a short walk, with a competent "mozo," into the coffee plantations, brought to view dazzling masses growing on the large forest trees left to furnish shade for the coffee bushes. Associated with *Cattleya Skinneri* was an Epiphyllum, its masses of pendent pads appearing like green fountains on the tree trunks. Propagating material of this species was collected, and cataloged as (A. 1).

Subsequent flowering in New York made it clearly referable to *E. guatemalense.* This same Orchid-Cactus association was observed in other parts of the Soconusco district. Neither species was found at high altitudes, 3,000 ft. being perhaps the limit. Later *E. guatemalense* was found in other parts of Chiapas, notably in the ranch country centering about Villa Flores—still in association with *Cattleya Skinneri.* This extension of the range brings *E. guatemalense* well toward the state of Oaxaca. The northern limit of the range, so far as I have it recorded, is along the road between Arriaga and the Pan American highway junction at Las Cruces.

As an ornamental pot plant, *E. guatemalense*

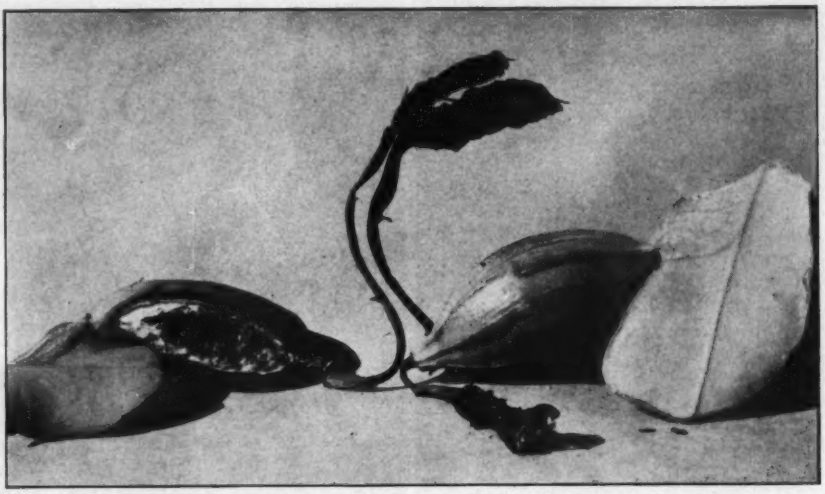


FIG. 129. Fruit of *Epiphyllum guatemalense,* photographed in November. It was 3½ inches long and 1½ inches in diameter; the color was a brilliant magenta or cerise. Fruits usually dry instead of splitting.

has much to recommend it. In common with other species of the "strictum*" group, it is very easy to grow. The flowers attain a diameter exceeding 9 inches and are perhaps the largest of the group; they are produced very freely throughout a long season. The single, large plant I now have, started to bloom late last spring, and at present in mid-October, flowers are still opening. Many more buds, in various stages of growth, indicate that with sufficient heat and moisture the blooming season might be extended well into the winter. *E. guatemalense* seems not to bloom continuously throughout the season. Rather, batches of flowers are produced at short intervals of time. A group of buds will develop, apparently neck and neck, but may open over a period of several days.

A rich porous compost, as favored for Orchid Cacti, will suit *E. guatemalense*—be sure it is nematode free. For the final potting a 9 or 10-inch pot is about right; it is after this pot is well filled with roots that an abundance of flowers may be expected. Remember that *E. guatemalense* is an epiphyte, and place plenty of potsherds in the bottom of the pot for good drainage and extra aeration. I prefer to fill the pot to the brim with the compost, and to place it in the porous clay saucer that matches. In this setup the plant can be doused with water, during the summer, without fear of over saturation. Water in the saucer is a reserve between waterings, conserves plant food salts in solution, and, I am inclined to think, serves to check nematodes—(another instance where "the wish is father to the thought"). In time mosses may cover the pot, the roots will ramify over the outside and into the saucer—developments that appear to benefit the plant.

Growers of Orchid Cacti will not find colorful, long lasting flowers here, but few will deny their superior grace. Aside from its flowers, a well developed plant of *E. guatemalense* is attractive at all times.

E. guatemalense, and its near relations, seem little evident in the varieties of hybrid Epiphyllum. Or are they?

FIG. 130.
Cattleya Skinneri, the orchid associate. Grown in the same New York greenhouse with *E. guatemalense.*

*The term "strictum" is used here to denote the group of species with hard, drought resisting pads, and flowers with narrow petals that open wide to form a rotate or salverform blossom.

Succulents in England

By G. D. ROWLEY

A synopsis comprising building and housing a collection, potting, watering, labelling, and general management, propagation, and hints and advice in general. This article aims at outlining in as brief and simple a manner as possible the essentials for the successful cultivation of the plants known collectively as Succulents. The increasing popularity of these most curious and specialized of all flowering plants, as well as the extreme shortage of books on the subject, create the need for simple, readable advice for amateurs on how to look after them.

Some succulents flower the second or even the first year from seed; others require longer, but given favorable conditions, once they have reached maturity they continue blooming year after year. The reasons why many in collections fail to bloom may be that the plants themselves are varieties that have to become very large or old (Opuntias, most Cerei, giant Aloes, Agave), or that they are prevented from doing so by lack of sun or warmth, restricted root space or other cultural deficiencies. Success in flowering succulents comes from keeping the plants clean, healthy, free from pests, and from proper observance of the resting periods.

A few genera particularly recommended for the profuseness of their flowers, or for blooming when very small, are:

CACTACEAE: *Rebutia, Lobivia, Gymnocalycium, Mammillaria.*

AIZOACEAE: MESEMBRYANTHEMUM and many of its segregates—*Bergeranthus, Carruanthus, Delosperma, Faucaria, Gliottiphyllum, Hereroa, Pleiospilos, Stomatium.*

CRASSULACEAE: *Crassula, Echeveria, Kalanchoe, Rochea, Sedum.*

LILIACEAE: *Gasteria, Haworthia* (rather unimpressive flowers).

PORTULACACEAE: *Anacampseros, Lewisia, Portulaca.*

COMMELINACEAE: *Cyanotis.*

HOUSING THE COLLECTION

A few succulents—the Houseleeks and Stonecrops, for example—are quite hardy and withstand the rigours of winter out of doors uninjured. By far the majority, however, require protection from frost. A sunny window sill facing South is admirable for a small collection; if a conservatory or greenhouse is available, so much the better, provided a little heat can be provided in the winter to make drops below 40° F. as infrequent as possible.

Thermostatically controlled electric heat is the ideal; for large houses a boiler is usual, while for smaller, often quite a modest oil lamp fitted with a radiator suffices. Alternatively the collection may be housed indoors in the winter months.

Succulents are so adaptable that many will live and thrive alongside tomatoes, ferns and such moisture-loving plants (as many have had to do during the war!), but a damp atmosphere is inviting trouble and this arrangement should be avoided if it is at all possible.

It cannot be over-emphasized that the key to successful over-wintering of succulents in our damp, foggy climate is proper observance of the resting period; by properly drying out and maturing growth in the autumn, the dry, dormant plants offer maximum resistance, whereas those that have been kept moist and in active growth all the year round succumb to the first sharp frost. This last-mentioned topic is of such importance as to warrant a fuller discussion.

THE RESTING SEASON

No plant will live without water, though succulents are best fitted to survive intermittent droughts. True deserts like the Sahara are devoid of life; semi-deserts, on the other hand, are the natural home of the succulents. The prime feature, then, of these plants is their specialization for rapid absorption of intermittent rain water and its retention for use during the drought spells that follow when no rain falls and any ordinary vegetation would be parched to ashes. For the purpose of tiding over the unfavourable spells, the plants enter a dormant state; growth and flowering cease, the breathing pores covering the green tissue become more or less closed, and until reawakened by further rain the plant draws on its own reserves of water. During this season shrivelling may occur, and in the foliose species some loss of leaves or even smaller branches. All but a few succulents can be induced in this country to take their period of "hibernation" in our winter, when outside conditions are least favourable to growth. They must be prepared for this by a steady diminution of watering in the early autumn until active growth has ceased; if kept well watered all the time they will continue growing and appear hale and hearty until the bad weather sets in, and then fall victims to pests and decay—or at least will not flower as they should the coming year.

We now come to the essential requirements for plant life, and how best to provide them in the case of succulents. They are:

Light and Heat (Supplied by sunlight, or artificial means).

Water and Mineral Salts (Supplied to the roots by the soil).

Air (Utilized through the leaf surfaces or green stems; also essential to the roots).

Each of these will now be dealt with in turn.

WATERING

Attention to the water supply is the most critical factor determining success or failure in growing succulents. Mention has already been made of the importance of observing a proper resting period in winter, and to bring this about the supply of water is gradually reduced, beginning in late summer to early autumn when there is still some sun about to ripen off the new growths.

Throughout the winter months watering is at a minimum; some people prefer to keep their plants perfectly dry, and though some shrivelling may occur this is soon made good when watering is again commenced and no lasting harm is done. This procedure is a good safeguard if low temperatures or sharp frosts are expected. However, a little moisture now and then at intervals of, say, three or four weeks during November to March prevents the roots from dying off too much, especially if the plants are kept indoors where the air is unnaturally dry. Here light overhead syringing is best as it also washes off the dust. Some succulents—many Crassulaceae and Liliaceae, and a few cacti (especially those with flat or three-winged stems—Epiphyllum, Zygocactus, Rhip-

salis, etc.) require more water at all times although the supply is still to be reduced in winter.

It is impossible to give definite rules for summer watering, which depends largely on the weather and on the individual plants, their state of growth (active or otherwise), age, size of pot, and so on. However, a few general hints can be given:

1. Leafy succulents mostly require more water than leafless ones, and bright green succulents more than those heavily spiny or covered with white down, scales, or hairs. The latter in general receive less sunlight on account of their dense surface covering, and consequently should be given the sunniest places possible in cultivation.

2. Stagnant water round the roots is anathema to all succulents. Never water until the pots have completely dried out from the previous watering, and never allow the pots to stand for long periods in saucers of water. Glazed bowls or miniature gardens without a drainage hole require the most careful treatment to prevent water standing in the bottom.

3. Water preferably in the evening following a sunny day, using a small can with a long spout. Do not pour water over the plants more than can be helped (except for occasional sprayings) as there is a danger of the droplets remaining and acting as small burning glasses when the sun comes out, or of causing rot by persisting in depressions in crowns of stems or at the point of union of grafts.

4. *Supply water only as the plant needs it and can make use of it.* In summer this may mean once a week, or once every two or three days in heatwaves. Remember that a plant that is well rooted and actively growing can utilize the water as it is supplied; unrooted cuttings or dormant plants cannot, nor can plants when external conditions are unfavorable (cold or foggy spells, etc.), and water should then be supplied very sparingly until the plant indicates by new growth, buds, or by "plumping up" that more is desirable. When in any doubt, do not water. One great advantage of succulents is that you can go away for a forthnight's holiday at any time and leave them unattended without any lasting harm ensuing.

5. Plants kept indoors, where the atmosphere is unnaturally dry, require more frequent watering than those in a greenhouse.

SOILS AND POTTING

The wide range of different soil mixtures that have been recommended for succulents makes it clear that, given properly regulated watering, it is not primarily the composition of the soil that matters—it is the physical nature—the loose, open texture that allows free drainage of surplus water and access of air to the roots. Bad drainage that permits the soil to retain water for any length of time turns it soggy and stagnant and is the best possible way to invite rotting off at the bases of plants. Caking of the surface soil, or the formation of green moss on the topsoil or sides of the pot are sure signs of faulty drainage.

The type of soil mixture usually recommended and in common use for succulents is composed of the following:

1 Part of loam—Preferably old, fibrous or turfy, fairly heavy loam sifted through a ½" mesh sieve and any bits of decaying matter picked out in the process.

1 Part of leaf mold (or Hot-bed soil) which must be old and thoroughly well rotted until all fermentation or active decay are over; or peat ("Sorbex" or a non-acid, sterilized variety).

1 Part of sand or fine gravel, which should be clean and rather coarse, not finely sifted nor salty.

To each bucketful of the above mixture add one cupful (roughly) of each of the following:

a. Crushed, coarsely sifted old mortar rubble, limestone, chalk, marl or powdered shells to keep the soil non-acid, and to supply calcium for spine formation, etc.

b. Crushed, freshly prepared wood charcoal to keep the soil "sweet" and counteract any tendency to stagnation.

c. Crushed porous pot, bricks or tiles to aid porosity.

The resultant compost should be coarse and gritty—not finely sifted or dustlike.

Succulents as bought should go from two to three years before requiring repotting, and in choice of pots, low, squat ones or shallow pans are best as the plants are naturally surface rooting. No harm comes from the use of small pots (in respect to the size of the plant); indeed, for beginners this is safest as it retards overwatering and many assert it promotes profuse flowering. However, larger pots give a better root run and prevent excessive drying out.

Cover the drainage hole with a curved piece of crock (or better a square of perforated zinc) and then add a layer of broken pots or crocks to facilitate drainage. Add a little soil, and suspend the plant in position while the roots are spread out with a stick. Any dead or decayed portions should previously be cut off with a sharp knife. Next tip in soil all round, rotating and banging the pot on the bench to settle it in around the roots. When full to, say, ½" below the rim, gently firm it down with the thumbs, but on no account ram it down so hard that it forms a concrete-like mass. If the plant does not support itself tie it to a small stick or discreetly place a few porous lumps of rock round the base. Water it rather cautiously at first until new growth commences.

Potting is best done during the summer, and if practicable compost should be sterilized before use, as this kills harmful bacteria, fungi, weeds, etc., and greatly improves the texture.

LIGHT AND HEAT

The fitful sunshine that filters through the fogs and hazy atmosphere of our industrial cities provides a poor substitute for the dazzling glare to which most succulents are naturally accustomed, but the plants are nothing if not adaptable and usually make the best of a bad job. Few Cacti, Euphorbias or Mesembryanthema ever have occasion to complain of too much sun, although in passing through glass, sunlight loses some of its beneficial properties, and if ample ventilation is not given there is some risk of dangerously high temperatures and scorching as a result. However, Cacti occur in the tropics as well as in semi-deserts, and some, indeed, in saturated forests (*Pereskia*) or as climbers (*Hylocereus*) or on boughs of trees like Orchids (*Epiphyllum, Rhipsalis, Zygocactus*), and these require some measure of shade from full sun. Many of the large-leaved succulents, too, do better if slightly shaded, and some, such as Gasteria and Haworthia, even thrive in complete absence of sun. It is a noteworthy fact that strong light often stimulates the formation of protective coloring in leaves and stems—attractive reds and purples which disappear in the shade.

Actually apart from considerations of cost and economy, artificial heat should be used as little as possible and not at all in summer; overheating makes

for lush, soft, sappy growths that readily succumb to rot or insect attacks.

AIR

Good ventilation, without draughts, is always important. If kept indoors the plants should not be exposed to gas fumes. In a greenhouse the windows and door can be kept open to advantage during most of the summer and in sunny spells at all times when the outside temperature is, say, above 50° and the air dryish and not foggy. Plenty of air is especially needed in the autumn to assist in ripening or maturing the new growths.

To be continued

BOOK NOTES

As of this date, all previous books lists and quotations from this press are void. This does not mean that prices of all books have advanced or changed—many have been reduced. A new list is being prepared and will be issued the first of the year.

PRICE CHANGES

Marshall & Bock—*Cactaceae,* out of print....$15.00

Manning—*What Kinda Kaktus Izzat*..... 1.50

Benson—*Arizona Cacti,* out of print, bound... 4.00

Boissevain—*Colorado Cacti,*
paper bound $1.50, cloth $2.00

Benson—*Southwestern Desert Trees and Shrubs,*
out of print

Backeberg & Knuth—*Kaktus ABC,*
paper bound $5.00, cloth $6.50

NEW EDITION OF THE STUDY OF CACTI

The revised edition of Mrs. Vera Higgins' *The Study of Cacti* is now ready for delivery. This is the best and only summary of the Britton and Rose classification. Understandable and especially recommended for beginners who wish to grasp the fundamentals in the study of cacti. The book contains 24 photos and a comprehensive chart for studying the differences in the various cactus forms. Postpaid in U.S.A. $2.90; foreign $3.00.

EDITORIAL

Britton and Rose clasification of 1919-1923 gave us a very comprehensive guide to use in the study of cacti. Naturally, this system was not perfect nor final but it was instrumental in bringing together all of the available information about these plants. Without this work, which was sponsored by Carnegie Institution, it is doubtful if there would have been a Cactus Journal, a Society, or a nation-wide interest in cacti. Now we are assured that, even with customary fluxations of interest, cacti have gained a permanent place in the botanical world and they will never fall to such low ebbs as in the 80's.

No classification can be static. Those who have a definite interest in these plants are finding new ones, checking old ones, and revising the classification to include this new information. In the past we have had very enthusiastic workers in this field beginning with Dr. A. D. Houghton in the local area, Dr. Borg of Malta, A. Berger and others of Germany, and Mrs. Vera Higgins of England. Many of our local collectors have passed on during the last five years and some have entered other fields or have become less active. W. Taylor Marshall is perhaps the most enthusiastic student of cacti and it is to him we are grateful for keeping up the interest these last few difficult years.

We feel the need of field men who can make further observations, collect again the plants that have disappeared from collections, and to make seed available. It is these field men who will have the most to say regarding a revised or new classification. We in the Americas, where all the cacti are native, should develop authoratitive workers who are competent to pass on changes in classification. Unless we do find such qualified men, then we must look to Europe where there is a great amount of interest and enthusiasm.

Among Europeans who have had a vast amount of field work and has perhaps observed more wild cacti than any living man, is Curt Backeberg. He has introduced many new plants and wrtiten prodigiously about them. He has new theories about classification that are now available to American students. Beginning with the January Journal we will supplement his published works with timely observation that are new to us and we have often been mistaken about the plants he knows so well.

With the cooperation of the Library of Congress, we have imported all of the remaining ltierature by Curt Backeberg. Most of this is in German but it is essential for anyone interested in classification. Many of the items are very limited and only a few sets will *ever* be available. All of this material will enter into new theories on classification and unless we understand its contents we can not discuss its pros and cons intelligently. It is hoped that a new group of interested workers will study Mr. Backeberg's many contributions and together will bring out a classification acceptable to the world.

* * *

The list of available publications follow:

1. *Blatter Fur Kakteenforschung* (published periodically from 1934-1938. This Bulletin of Cactus Research is complete and contains 460 pages and 250 photos. Doubly valuable to us because each description has an English summary. Spring binders will be available or volumes may be bound.
2. *Cactaceae* or Year Books of the German Cactus and Succulent Society. These are in German and the 344 pages are the rarest part of the material. Distribution, maps, classification, Argentina Cacti, etc., 1939 2 parts, 1941 2 parts, 1942 2 parts, 1943-44 (Distribution of Cacti.)
3. *Cactaceae.* Yearbook 1937. a. Introduction and Morphology of Cacti, 40 pages (only 7 available). b. Yearbook 1937, 1st Part, 58 pages. c. Yearbook 1937, 2nd Part, 46 pages.
4. *Backeberg's New Species* appearing in his book, "Stachlige Wildnis" 1942. Six pages.
5. Backeberg's *Bluhende Kakteen Catalogue,* 1934. 40 pages with 72 illustrations of cacti.

These five items available only in sets without exception at $38.50. Express only. Foreign $40.00.

From the above list the following are available as separates:

Blatter Fur Kakteenforschung
$6.75 postpaid, foreign $7.25

Cactaceae Year book 1944, Distribution of Cacti, 136 pages and 44 maps, unbound $4.65 postpaid, foreign $4.75

Backeberg's Catalogue 50c

Please add Sales Tax on Californian sales

SCOTT HASELTON

Box 101 — Pasadena 16 — California

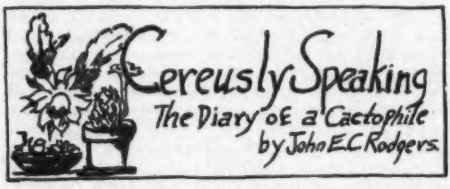
CACTUS CANDY AND CONSERVATION

A recent issue of a national magazine made the statement that a Tucson, Arizona, candy shop ships over a ton of cactus candy every month to out-of-state addresses. A constructive work for Arizona societies would be, first: to see if this so-called cactus candy is made out of Barrel Cacti or watermelon rind and, second, to prohibit the use of cacti in candy making. The only value of cactus in this product is its advertising appeal.

NEAL'S CATALOGUE

In 1935 W. T. Neale & Co. of England published a 200 page list of cacti and the other succulents. This valuable list is useful in tracing plants generally found in cultivation; the characteristics of a plant are briefly stated. The chief value is its 160 photographs which are helpful in identifying. Only a few copies of this edition are available at $1.50. Formerly listed at $3.00.

BOX 101, PASADENA, CALIF.



Dec. 1. Started to snow—24°. Hardy Opuntias wrinkled and lying flat, read for winter. Pereskias have begun to shed their leaves; they are deciduous with my treatment and resume growth in March. Brooder stove staying red hot on side away from the wind; must be looked after four times a day this weather.

Dec. 3. 20° at 5 a.m. Gasterias, Haworthias, Faucarias, and Crassulas are growing. I use a 100 watt electric lamp from 5:30 p.m. to 9 p.m. When sun is not shining during the day this supplementary light seems to be of some help in getting the shy bloomers to bloom.

Dec. 4. Gave second heavy watering since November 30. Temperature was 50° at noon. *Faucaria bosscheana* bloomed—has narrow leaves with slight trace of "teeth." *Zygocactus truncatus* has ten flowers on a small plant. Always keep a few so that I have October to December blooms.

Dec. 6. *Rhipsalis grandiflora* showing broken skin spots which indicates buds. *Lemaireocereus beneckei** (a seedling in 1942) is now 10 inches high and is covered, near the top, with white powder. Soil is a loose gravelly type; use sand and chicken manure mulch in the spring. Likes strong light with plenty of winter sunshine (try and get it here).

Dec. 8. Two of my *Rebutia minuscula* plants seem to be resting and the other two are growing. Grafted crest of *R. minuscula* is growing on *Cereus peruvianus* seedling; blooms for Dr. Machwart of Parma, Ohio, and sets seed, too. Let fires go out; was 65° at noon.

Dec. 10. *Rhipsalis grandiflorus* budded. Is always a show plant; has hung in the same place in the glasshouse for four years. Blooms up and down the stems and are one inch in diameter—look like pom poms. When fires are going, the plants dry out too fast—need to keep small pots wetter.

Dec. 12. The Missus wore six Zygocactus flowers in her hair to a party. Flowers hold up if they are soaked in water for awhile, the same as for other cut flowers. Rhipsalis need more frequent watering and usually get it. Examined the "large enough to bloom" Aloes for buds. This date in 1944 we had 10 inches of snow. *Huernia pillansii* has turned purplish with green "spines." None prettier, I think.

Dec. 14. *Faucaria bosscheana, albidens, tigrina, tuberculosa,* and *militaris* are in bloom today. Good chance to compare them. *F. tuberculosa* has a more open flower with slightly twisted petals. *F. albidens* has attractive yellow flowers against the white edges of the leaves. Agaves under the bench show very little etiolation. Southwestern cacti on high shelves have been getting all the light possible.

Dec. 16. *Mammillaria fragilis* buds are pushing up through the spines. *Crassula tecta* bloomed—not very attractive with its small white flowers (see "Succulents for the Amateur," Fig. 150). *Bulbine aloides* has seven leaves but has not flowered. Looks like a Gasterolea to me.

Dec. 18. *Kleinia pendula* and *K. repens* are budded. Kleinias need good soil, light, and less water during the winter's dark weather. All have interesting leaf markings on the stems when the leaves drop. Flowers resemble feather dusters.

Dec. 20. *Cephalophyllum alstonii* has four buds. Have room in the four-inch pot for at least four more! Color galore (Mrs. Bolus quoted on page 28 "Succulents for the Amateur") is right. No color description can do it justice. Have two cuttings of *Hoya carnosa* growing in water four two years. *Euphorbia splendens* is getting new leaves at the end of the stems.

Dec. 26. *Euphorbia fournieri* blooms the year round and sets seeds. *Epiphyllum ackermannii* in bloom. 16° at 11 p.m. Got a letter from G. H. Herr, La Verne, California. He likes column especially the one-genera articles as I did in 1946. High winds and no sunshine, so no blooms.

Dec. 29. *Schlumbergera russelliana* bloomed—bell-shaped. *Lepismium commune* has bloomed all the year. *Hariota salicornioides* budded. Watered whole collection; some plants have gone dry for almost two weeks.

Dec. 31. Another quiet New Years Eve. 150 days of sunshine this year. 54 cacti flowered and couldn't keep accurate count of the other succulents. With this comes the end of the sixth year of "Cereusly Speaking." I have enjoyed passing on to you my experiences in the form of a diary, and I appreciate the many friends I have made. Every letter you have written is enjoyable and I hope you will keep on writing as I like fan mail. To you Scott, as editor, it has been an enjoyable association and I appreciate your generosity in giving me the space.

*This is the first hardy cactus to flower in the Editor's winter garden in Altadena, California. Just as the white frosts start in the fall, and most other cacti are dormant, each of the three-foot stems puts out about a dozen flowers around the top. Although wihtstanding temperature down to 28°, the plant does not seem happy because in its habitat this should be the summer flowering season.

EDITOR'S NOTE: Thank you John for six years' conscientious work for our JOURNAL. Unless one has written a monthly column, he cannot realize the amount of work that goes into a single page of the JOURNAL—for six years! We can look forward to occasional specialized articles from John Rodgers this next year and in the meantime don't forget to write him at 1229 W. 8th St., Lorain, Ohio.

SPINE CHATS

LADISLAUS CUTAK

Just think of it, for the past five years I have been coming to you as a SPINE CHATTER, dishing out information of varied sort on cactophiles, on cacti and other succulents, and on everything else connected with our hobby. These years have been happy ones and judging from the letters and comments coming to me from all parts of the world I am sure that some of the knowledge and gossip which has been dispensed through SPINE CHATS has been appreciated. Be assured, SPINE CHATS will serve you in the coming new year and years to come as long as there is demand for it.

* * *

Each month I have made attempts to acquaint you with one or two personalities, informing you of their background and circumstances which led these individuals to become avid members of the cactus clan. Some of the folks I have introduced in these pages are well known names in the cactus world and others are scarcely known except to a few friends, but it is the latter who often have led more exciting careers in other fields. For instance, listen to my story about an enthusiast who lives in Michigan. This girl attended the Convention in Cincinnati last June and if it was not for some "horseplay" on my part I would not have found out what I have about her. Enid Stamnitz was a professional dancer, having had eight years stage experience. She specialized in acrobatic, tap, ballet and all interpretations and even taught at the "All American Conservatory of Music" in Detroit until she moved to Plymouth. For four years she sang on the radio and recently had an offer for a "come-back" but her responsibilities at home are too many. Enid plays nursemaid to a large orchard—something like four acres planted out in fruit—and during the harvest season is kept busy picking, sorting and marketing the produce. This young lady who danced and sang before large public audiences is now contemplating a course in one of the universities in order to broaden her knowledge for some experimentations she'd like to conduct in agriculture. Besides this she is designing a desert garden which, if her plans go through, will eventually take up about an acre of ground.

Enid's interest in cacti was inherited from her mother. Mrs. Labadie began her collection several years ago but due to increasing inactivity brought on by arthritis the cacti were adopted by her daughter. Enid tells me the plants are responding beautifully to her care, and have rewarded her with many blooms. Woe to the cactus that fails to reward her! Her French patience is nearly exhausted because one hybrid Torch Cactus has not produced a single flower in the eleven years it has been in the collection. She threatens to get rid of it quickly unless Mr. Cereus peruvianus condescends to produce the desired floral ornament.

The mother-daughter collection consists of about 400 plants. Of this about 100 are Mammillarias in distinct varieties. Then there are all the obtainable species in the Astrophytum group and only two more Cephalocerei are needed to complete that section. Crests and grafted plants are featured and Enid is particularly proud of one graft that boasts more than one hundred heads. Next spring, Mrs. Labadie and daughter Enid are planning to erect a new greenhouse to further enable them to complete some of their groups. Even arthritis cannot dim love and enthusiasm for the bizarre cacti!

* * *

Dr. John Muir, a well known South African botanist, passed away at the age of 73 at Riversdale on August 4th last. He received his medical degree in Scotland, later moving to South Africa to practice his profession. After his retirement from medicine many years ago he devoted his time to his former hobby of botany and had a profound knowledge of the South African flora. He specialized in Aloes and other succulents, and his garden has been visited by many scientists. One of the rarest Aizoaceous plants, *Imitaria Muirii,* is named after him as well as *Aloe Muirii.* His death is a severe loss to South African botany.

* * *

Drs. J. Reitsma and W. Ch. Sloof, mycologists of the General Experimental Station, Buitenzorg, had a paper recently published in *Chronica Naturae* (June 1947, pp. 92-94), which deals with a disease of Talinum leaves, first observed in the experimental garden for vegetable culture at Moeara. The first sympton of the disease is the appearance of minute redbrown spots, scattered over the leaf, usually first visible on the underside slightly raising the surface. These spots may enlarge to circular patches and turn parchment-like and translucent, brittle and frequently make holes. Although the disease spreads rapidly on the leaves of grown plants in the rainy season, the plants, apart from spotting, still look healthy; therefore it is not necessary to apply any method of control. The fungus which attacks *Talinum triangulare* has been given the name of *Brachysporium robustum.*

* * *

In order to complete the Museum's collection of Middle Central American flora covering El Salvador, Honduras and Gatemala, the Chicago Natural History Museum sent out its fifth botanical expedition to Central America under the leadership of Paul C. Standley. He left in November, 1946, and returned in September, 1947. Most of the ten months were spent in the field. Standley states that there are extensive areas of thorn forests and an unusual display of cacti in the central part of Honduras. A few days before his arrival in Nicaragua, one of the country's long quiescent volcanoes, the Cerro Negro, erupted violently, sending up a column of ash-like sand estimated at 40,000 feet in height. During the ten months collecting, about 12,500 separate collections of plants were made and most of them come from localities not represented previously in the Museum's collections. It is believed that they include a number of species hitherto unknown to science.